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ABSTRACT

Based on a review of the research and theory on cohesion in writing, it was hypothesized that developmental students could improve their writing competence and their use of cohesive ties by studying the mental process, meaning, mechanics, and rhetorical purposes of cohesive ties. To test this hypothesis, the persuasive and expository compositions of 79 college students were analyzed for cohesive ties and were holistically evaluated. Two teachers each taught a control group (traditional instruction) and an experimental group (instruction focusing on 11 cohesive ties). The results of the study were as follows: (1) there was a positive correlation between the number of types of cohesive ties and the holistic quality ratings of the papers; (2) differences in cohesion were not related to the mode of the assignment; (3) differences between pretest and posttest scores were not large enough to be significant, though differences between pretest and posttest means showed statistical significance when the experimental groups were compared with the control groups; (4) treatment, teacher, and mode made no significant differences alone, although the effect of the teacher neared significance for holistic scores, and (5) teacher-treatment group interactions caused significant differences in both cohesive ties and holistic gains, though they accounted for only a small part of the total difference. (RL)

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Cohesion and Mental Processes in Writing Competence

by

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Cohesion and Mental Processes in Writing Competence

Accountable education in composition requires teaching and assessing objective characteristics of good writing. Improvement in teaching composition requires repeatable objective measures of writing quality. If we had such measures we could look for their features in writing samples, teach students to produce them, and then tabulate them to record progress. If the features were forms that relate to content, teaching students to use the forms would be teaching them the processes that improve the content of their writing.

One appropriate measure may be the forms in a sentence that relate to specific words in another sentence. These forms, called cohesive ties, show how the writer is developing the content.

Cohesive ties express the cognitive processes of perception, attention, pattern recognition, comparison, abstraction, etc. These mental processes parallel traditional rhetorical concepts. The resemblance between rhetorical forms and mental processes expressed through cohesive ties suggests that using rhetorical forms or cohesive ties requires performing the intellectual processes.

English teaching has traditionally included the mechanics of the ties, their grammar and punctuation. If that type of instruction includes the meaning of the ties, then it can teach the mental processes which the forms communicate. Students not yet practicing certain intellectual processes can learn ways to manipulate ideas. As writers perform the cognitive processes using the linguistic forms to relate content, they are inventing ideas for

sentences, paragraphs, and compositions. For example, the mental process of comparison finds similarity; it uses comparative cohesive ties such as like, more, and modifier forms. Writers look for comparisons, match similar items, and choose the proper terms. These steps are intellectual skills for thinking in writing.

For accountability, an objective count of the variety of properly used cohesive ties may serve as a measure for diagnosis and assessment. A good measure enables a teacher to plan what students need to speed writing improvement.

The experimental course described here tries to teach four things to college students in basic writing classes: cognitive processes, rhetoric, cohesive ties, and mechanics. This experiment resulted from assumptions about the relationship of cohesive ties to rhetoric and cognitive processes. These assumptions need an explanation now, although it must be incomplete because the cohesion analysts and cognitive theorists are still perfecting their work.

Cohesion, Mental Processes, and Rhetoric

The authoritative work on cohesion in English is Halliday and Hasan's (1976). It categorizes cohesive ties of five types: reference, lexical, reiteration, substitution, ellipsis, and conjunction. Reference ties include pronouns, demonstratives, and comparatives. Another type of tie repeats a reference with the same lexical root, a synonym, a closely related item, a lower or higher level of abstraction, or even a general noun. When a

writer intends similar forms, good English usage provides for ties of omission as well as for substitutions, such as do or so. Conjunctive ties are transition words that specify exactly how sentences relate.

Cohesive relationships are a natural part of language use. The ties develop thought, organize it, style it, deliver it, and help make it memorable. To plan a writing course one needs to know what cohesive ties and cognitive processes are used in rhetoric, which is effective, purposeful communication.

First, however, any discussion of thoughtful writing needs a theory of how human minds work, since writing requires thinking. A responsible modern philosophy begins with the assumption that people are active. They seek out information; they create their own internal model of the universe; they act on that model to influence their environment; they evaluate their success; and they revise their models and plans according to their own motives.

The cognitive or mental processes are the ways by which a human mind directs its attention, observes significant details, and relates those details to previous experiences so as to find or create meaning and to incorporate it into comprehensive understandings. Meaning is in relationships. Basic mental processes in the information-processing paradigm include attention, perception, abstraction, problem-solving, learning, memory, and using language (Lachman, Lachman, and Butterfield, 1979). This list has various parallels in taxonomies of educational objectives (Bloom, 1956, 1964).

Theorists on information processing have replaced the concept

of associations that have no content with a notion of links that specify relationships. Although research has not yet validated a model of how the human mind stores and retrieves ideas, cognitive psychologists assume that representation is central. Representation, of course, goes beyond language. All the major competing models assume separate storage for words and concepts (Lachman et al, pp. 128 ff.). The theorists assume that comprehension (use of a word to find a concept) is independent of production (turning a concept or analog representation into wording).

Cognitive psychologists have not yet determined the form of what people understand: Do we absorb a linguistic proposition or some visual analog? Lachman et al. report that Herbert Clark has a new untested theory of sentence comprehension (pp. 44-440). The theory assumes a contract between listener and speaker. Clark shows how people relate new information to known or given data by adding, bridging, or restructuring. These processes create cohesive meaning.

Cognitive psychologists assume that complex thinking arises from a small number of intellectual processes and that linguistic features reflect the processes. Cooper and Odell's 1978 anthology Research on Composing itemized insights from cognitive psychology that could change the teaching of composition. One insight is that we should examine the processes of thinking and writing. Since thinking is a reciprocal process that changes the thinker-processor, mature thinking differs in quality from beginning thought. Cooper and Odell ask (p. xii) for more research: "What are the features (syntactic, lexical, conceptual) of successful

pieces of discourse?"

Odell (1977) observed linguistic cues to measure changes and growth in intellectual processes. He analyzed cues for focus, contrast, classification, change, physical context, and sequence. Some of his cues resemble parts of Halliday and Hasan's 1976 list.

What most improves writing quality, according to research that Arnold reported (1964), is not intense evaluation or frequency of practice, but the nature of the assignments. Advice on assignments abounds. Examples of specific advice based on rhetoric appear in D'Angelo's continuing extensive work and in articles by Lunsford (1978), Bartholomae (1979), and Taylor (1979). Thus far, however, rhetorical theory has not generated specific methods for teaching cohesion. If we add insights from cognitive psychology to a discussion of cohesion in rhetoric, we may find what we need to teach; we may find a better way to organize traditional material.

Cohesion in Invention

Cohesion involves all five inseparable parts of the rhetoric process: invention, arrangement, style, memory, and delivery. When Aristotle discussed invention, he listed twenty-six common *topoi* for getting ideas of what to say. *Topoi* are commonplaces or patterns for the expression of mental processes. These *topoi*, have psychological reality (D'Angelo, in press). Corbett (1971) divides Aristotle's list into items related to definition, to comparison, to relation, to circumstances, and to testimony.

Definition names an idea and classifies it within a higher category. In so doing, definition may use many forms of cohesion: repetition of the same lexical item or its synonyms, related abstractions, third person pronouns, demonstratives and the specific article the, and sometimes even a general noun, such as thing. Comparison takes a special cohesive form of adjectives and adverbs. Contrastive and causal conjunctions express cohesive relationships. To discuss circumstances, cohesive expressions of time and summary are necessary. And when testimony cites precedents, it uses specific reference to examples of a type already named. Testimony also repeats lexical categories mentioned before, and it uses higher or lower level categories for stating relevant laws, maxims, and statistics. All these expressions are cohesive.

Students practicing choice of these linguistic forms are seeing how thought develops, how invention or discovery works. Use of the forms requires doing the thinking that the topics require. Moffett (1968) believes that as children mature they naturally learn to make increasingly higher level abstractions. He says that qualifying thought and elaborating sentence structure develop together. If students reach college needing remedial work on sentence structure, they may also need cognitive clues to the thought that the structure represents.

Adult basic writing students often have well-developed methods of oral communication. However, they lack much experience in written communication and are not aware of its differences and its unique demands and resources. One demand, for example, is the need to state context explicitly.

Since writing deals with things in their absence, it encourages learning how to deal with empty categories, such as those that occur in the future or in hypotheses. Students need practice in such dealings. Writing changes the nature of thought. Writing objectifies words for prolonged scrutiny, encouraging private reflection and skepticism (Goody & Watt, 1972). The consequences of literacy include the ability to analyze the past and to plan for the future.

Polanyi shows how people use their tacit, personal expanding conceptual frameworks to accommodate and assimilate experiences (1958). Weak conceptual frameworks need strengthening; and as writers practice the methods, they will be using mental processes and cohesive ties. Methods of teaching invention, as classified by Young in 1976, include neoclassical, dramatistic, tagmemic, and prewriting techniques. Teaching mental processes and the cohesive ties that express them may be another way to teach invention. Young later (1978, p. 44) calls for research on a basic question, "Do acts of invention occur cyclically or in conjunction with stylistic and organizational acts?"

Cohesion in Arrangement

When writers organize an amorphous thought into a linear form for written compositions, they mark their arrangement with conjunctive ties, tenses, and levels of generality.

Quintilian compared cohesion to masonry between bricks, to a helmsman on a ship, and to a traveler's knowledge of the route (Benson & Prosser, 1972). Cohesion specifies relationships. Cohesive ties show how ideas are being manipulated. When ties

are missing, the human mind will look for order anyway. Francis Bacon in 1620 called it an Idol of the Tribe to suppose more order in the world than actually exists. However, for meaning one must realize relationships, as Pike has pointed out (1964); meaning is not in isolation. For Winterowd (1970), all units beyond the T-unit are related in only a limited number of ways: coordinate obversative, causative, conclusive, alternative, inclusive, and possibly sequential.

Cognitive psychologists know little about the formation of abstractions, but the physiology of the nervous system requires some transformation or organizing to occur during early synapse, since the human eye has more receptors than the optic nerve has ganglion cell fibers (Lachman et al., pp. 493-94). Thus perception cannot be passive. Observers must organize their perception to understand it themselves before they can report it to others. Emig (1978) notes, in consequence, that perceptive writing requires vision at some time; she states that none of the well-known blind writers were blind at birth. She suggests that writing requires setting firm figure-ground relationships so that the writer can focus and subordinate properly.

Rhetoricians relate the structure of thought to the structure of discourse. Rhetorical organization begins with recognizing classes. From there, children grow in their ability to organize (Britton, 1970, p. 205; Applebee, 1978). The young human mind manipulates classes to assimilate and accommodate what it encounters (Bruner, 1956; Vygotsky, 1962; Inhelder & Piaget, 1964). Bereiter (1979) believes children are unable to suppress inherent order.

Their eagerness to get on to the next item precludes attention to details and alternatives. Bereiter attempts to direct pupils' attention by offering beginnings of sentences, some of which include cohesive ties.

Ninth-graders in a program with the acronym ROMAC practiced reordering, manipulating, analyzing, and comparing sentence strips (Schiff, 1978). ROMAC students surpassed control students in rhetorical patterning and in quality ratings on Educational Testing Service Composition Rating Scales. ROMAC students also used more subordination strategies and pronouns. These students, however, did not use more connective words or elaboration.

D'Angelo (1975) asks whether children can be taught structure or if they must discover it for themselves. He feels that the traditional concepts of unity and coherence are not very useful in helping students to perceive the patterns they use in their own writing. As an improvement, he contrasts paradigmatic and syntagmatic analyses of structure. Paradigmatic analysis sees a pattern of repetition or spatial arrangement of elements. Diagrams show paradigmatic patterns, but outlines list the elements for syntagmatic analysis. The latter finds a linear or temporal order after a lead, with coordination or subordination following.

Coordination and subordination have different kinds of cohesion (Christensen and Christensen, 1976, pp. 148-149). In subordination, unity comes from each sentence developing from the one before or making a relevant comment about it, with cohesive links of pronouns, repetitions, etc. Emphasis in subordination comes in the movement from general to specific. If subordinate

structure looks coordinate, the reader is misled. Coordination gets its unity from repeating a method of development, its coherence from stating like ideas in like ways, (such as in parallel sentence structure), and its emphasis from repetition and climactic order.

Our print code develops in readers a feeling for the separation of ideas into appropriate blocks, as sentences and paragraphs. Cohesive ties relate the blocks, The ties fit bits of data into structures of increasing complexity and power; without cohesive structure all that exists is mass, the mess of uninterpreted data that Perry (1963) calls "cow," in contrast to "bull," which is relevancies without facts. Later, Perry explains moral and intellectual development from simple dualism, complex dualism and relativism, to commitment (1970). A narrative of such progress, however, cannot substitute for analytical thinking (Flower, 1979). Students need methods of logical and heirarchical organization for the ideas that temporal patterns obscure.

After writers have chosen a pattern, they give readers cues that signal the organization. Instruction in reading describes those cues (Herber, 1978). The terms "thematic tags" and "proleptic devices" refer to cohesive ties used as signals (Hirsch, 1977). Shaughnessy notes that teachers often encourage students to use signals of stylistic effects before they know how to organize for the effect (1977, pp. 286-7). DeBeaugrande got unexpected results when he rearranged information in a paragraph (1978). Patterns of organization need more research (Becker, 1965; Odell, 1979).

Using present knowledge, Hartwell (1979) suggests specific techniques for teaching the commitment-response pattern, but he

adds that poor readers need extra help moving from linear relationships to heirarchies, as well as from the tacit to the explicit. Farrell (1978) calls basic writing students "residually oral," since they have not yet reached the syntactic stage of cognitive development. He notices that speech expresses cohesive relationships by arrangement, while writing makes them explicit. He thus recommends teaching literate modes of thinking before teaching cohesive ties.

Cohesion in Style

Experimental evidence shows that people usually process simple, active, affirmative, declarative sentences faster than other sentences (Lachman et al). They remember content, not form. Context influences the interpretation.

Traditional studies of style classified tropes and figures that use the cohesive ties of comparison and contrast. Joos identified formal speech by its cohesion and detachment (1961, p. 38). Stylistic exercises might promote proficiency, Corbett believes (1971, p. 534). He quotes Quintilian, "Write well and you will soon write quickly."

As students mature and make increasingly explicit observations, they notice similarities and inherent relationships in their short sentences, and they naturally move to combine them. Mellon (1969, pp 18-19, cf. Hunt) found that within T-units, coordinate and comparative conjunction does not vary with the age of the writer. However neither he nor Hunt studied how cohesive ties between T-units might change with maturity. Other research has found that counts of T-units or such incidentals do not adequately predict the quality of adult writing (Emig, 1971; Nold and Freedman, 1977;

Gebhard, 1978).

Crowhurst and Piche' (1979) report that argument was more complex syntactically than description and narration in grades six and ten. Rosen had made similar findings (Britton et al., 1975, p.2). One wonders if the use of cohesive ties parallels syntactic complexity. Another question is whether different modes of writing use different types of cohesion. Also one might pursue Ohmann's suggestion (1964) that style reflects a writer's conceptual organization; cohesive preferences could do the same. To make any choice, students must know their audience's need for patterns, omissions, and substitutions.

Cohesion in Memory

Cognitive psychologists seem to agree that lexical memory differs from visual or conceptual memory. Their theories all involve cohesion, but so far experimental results have not clarified how the memories operate and connect (Lachman et al., pp. 298-334). Many modern researchers have found that pictures are remembered better than abstract words (Reynolds & Flagg, 1977). Paivio advances a dual coding system to account for this difference, but relating the two codes to each other remains a problem. Tulving distinguishes the episodic memory of autobiographical learning experiences from semantic memory for facts and meanings. Semantic memory uses inference, so Quillian draws a hierarchical network that provides for inference, but his model has problems with negative statements.

The Collins-Loftus theory of spreading activation suggests a network of concept nodes with tags on them to tell their relevance. Another model of semantic memory compares defining features; this

model, by Smith, Shoben, & Rips, uses the rhetorical concepts of definition and comparison.

In experiments by Harris and Brewer, words showing time made tenses more memorable (Lachman et al., p. 433). The work of many cognitive psychologists gave Hirsch a base for his theory of readability (1977). He says that readers remember more easily when writers have used the cohesive ties of transitions and of repetitions of a small number of thematic tags. Therefore one of his four maxims for writers is to use integrative devices between clauses and sentences (pp. 155 ff.). His conclusions suggest teaching lexical and conjunctive ties.

Cohesion in Delivery

Although modern rhetoric often ignores delivery, much difficulty in writing arises from the fact that basic writing students are not yet accustomed to the demands of writing that differ from those of speaking. For inexperienced writers, writing can actually impede thought. Oral situations provide their own context; uttering statements in sequence is sufficient. Basic writing students need to learn to imagine the audience, supply the context and all the detail needed, relate the ideas, and at the same time contend with the mechanics of spelling, punctuation, and edited grammar.

The differences between writing and speech are what make writing essential for the higher cognitive functions, such as analysis and synthesis. Writing is a mode of learning, Emig says (1977). Shaping a thought sharpens it. Careful analysis and synthesis require precise expression of classifications and relationships, the things that cohesive ties signal. When students focus on the ties between sentences, they can learn sentence boundaries and their

punctuation. Basic writers working with cohesive indicators of time sequence learn the value of the forms for tenses.

A process approach to writing suggests the place of error analysis in teaching composition (Kroll & Schafer, 1972). Errors are a natural stage in intelligent learning; they show what processes the student is using. The pedagogical implications of this view are tremendous. It encourages teaching revision and gives grammar its proper role in the composing process (Laurence, 1975). Cohesive writing needs the mechanics of grammar and punctuation that basic writing courses usually teach in one manner or another. However, teaching grammar alone does not improve composition (Meckel, 1963; D'Eloia, 1977). Standardized tests of copyreading skills do not measure cohesion. Grammar is necessary but not sufficient for cohesion.

Cognitive psychologists are not ready to give advice on teaching cohesion, grammar, or delivery (Lachman et al., 1979). However, experiments on memory and processing times have established the psychological reality of grammar, phrase structure, and grammatical transformations. Some non-linguistic factors such as context have a role. The experimenters have not completely clarified the status of the deep structures of Chomsky's standard theory, because manipulating deep structure changes meaning.

The surface features of writing may be only accidental, or they may reflect real growth. Hunt called some structures early-blooming varieties, others late-bloomers (1977). Use of a specific type of cohesive tie may show a new skill doing a mental process, a new way of seeing a relationship. When students learn to express a relationship, they realize it exists and begin to look for

it. When their general educational development has not led to natural use of common structures, basic writing students need lessons on the thinking, wording, and punctuation for expressing complex relationships.

The discussion of rhetoric and mental processes thus leads to the practical question of how to teach and measure cohesion.

Teaching and Measuring Cohesion

Analysis of cohesion is well begun, although assessment is still a barrier to progress in composition teaching and research (Hirsch, 1977, p. 176). The National Assessment of Educational Progress is defining coherence in terms of syntax and organization, establishing a coherence scale, and coding papers (Brown, 1978). Hartnett (1978) conducted pilot studies correlating the range of types of cohesive ties with the quality of student writing, holistically graded. The cohesion correlation was .82, which is higher than correlation with errors in mechanics (-.74), primary traits (.68), specific intellectual process cues (.61), Test of Standard Written English (.61), mean T-unit length (-.58), student ratings (.56), length in words (.43), and percent final free modifiers (-.41). Only the Nelson-Denny reading score correlation (.88) was higher than the correlation of cohesion with holistic quality.

Method

The purpose of this research was to find out if developmental students improve their writing competence and use of cohesive ties when they study the mental process, the meaning, the mechanics, and the rhetorical or communicative purposes of cohesive ties.

Competence was defined as holistic quality score. The study sought answers to these questions: Does cohesion correlate with the quality of writing in basic writing courses? Do students who study cohesive ties use more types of them and write more competently than do the students in ordinary writing courses? Do basic writing students use more types of cohesive ties in persuasive mode assignments than in expository assignments?

Subjects

The subjects were the students in a basic writing course at College of the Mainland, a community college in Texas City, Texas. In this course, Communications 136-139, Writing Improvement, about 49% of the students are white-Anglo, 33% are Black, 15% Hispanic, and 3% Asian. Ages run from 17 to 65 with a mean of 28. Women students slightly outnumber men.

The college places in this course applicants who scored between 23 and 34 on the Test of Standard Written English and showed a Nelson-Denny reading test grade level of at least 7.5. A diagnostic writing sample the first week of the course verifies the accuracy of placement. The control group was the Fall, 1979, sections of Communications 136-139. The experimental group was the Spring, 1980, sections of the same course. Students in the spring sections signed a statement giving their informed consent to participate in the experimental study.

This study required four writing samples from each student. Papers of students who did not write all four assignments were removed and used for training the raters. Forty-four complete experimental sets and thirty-five control sets remained as the corpus

for analysis.

Assessment and Experimental Materials

Two instructors (not the experimenter) taught the control course by the usual modified-Garrison method, assigning approximately 7600 words, including exercises, prewriting, drafting, and revision, with frequent student-teacher conferences. The students wrote on an expository and a persuasive topic at the beginning of the term, and then on different persuasive and expository topics at the end of the course.

The instructors of the control courses graciously agreed to teach the same course experimentally in the spring, following lesson plans which the experimenter devised. The plans followed the structure of the control course as much as possible, with about 7600 words of assigned writing. The plans conformed to the "Standards for Basic Skills Writing Programs" (Tate, 1979).

The materials included diagrams, outlines, examples, discussion questions, cloze procedures, sentence-combining exercises, etc., besides writing assignments with a wide range of purposes and audiences (want-ad, memo, story, personal memory, explanation of riddles, etc.). Each unit taught four points: (1) a mental process or thinking skill, (2) the cohesive ties that express that process, (3) the mechanics of grammar and punctuation needed for the ties, and (4) the rhetorical concepts requiring the mental process. The units covered (1) pronouns for focusing attention; (2) additive ties for adding detail in completing sentences; (3) synonyms, repetitions, and demonstratives for definition; (4) comparisons for seeing similarity; (5) contrasts and negatives for finding differences;

(6) time expressions and tenses for narration and processes ordered by time; (7) causes and effects for problem-solving; (8) higher level classifications for abstracting; (9) summarizing; (10) elaboration and continuity; (11) parallel structures for coordination; and (12) substitution and revision.

This research used six-point holistic rubric which the experimenter devised to measure the quality of writing. The research required also a measure of cohesion. Definitions and examples of type-of cohesion and instructions to tabulators were extracted from Cohesion in English (Halliday & Hasan, 1976). A form for tabulating the range of types of cohesive ties was pilot-tested twice and revised. It records which of eighteen types of cohesive ties appear in the sample: pronoun, demonstrative, comparative; same word, association, higher category, general noun; substitution or omission of noun, of verb, of clause; conjunctions for addition, contrast, cause, result, continuity, time; sequence of tenses, and parallel sentence structure.

Procedure

Students wrote pretest and posttest essays according to the following design:

GROUP	PRETEST	TREATMENT	POSTTEST
Experimental #1	Topics A, C	Cohesion	Topics B, D
Experimental #2	Topics B, D	Cohesion	Topics A, C
Control #1	Topics B, D	Traditional	Topics A, C
Control #2	Topics A, C	Traditional	Topics B, D

Topics A and B were expository; topics C and D called for persuasive writing. The instructor of the first control group taught the first experimental group; the second instructor taught the other section. Each experimental and control group contained two sections

so that both day and night students could receive similar instruction.

At the direction of the experimenter, a secretary removed the cover sheets, coded the writing samples, and mixed them so that evaluators would not know whether they were pretests or posttests or from experimental or control groups. The secretary prepared a master list of code numbers for recording the scores of each student.

The experimenter trained three highschool teachers to evaluate the essays holistically and four others to tabulate the types of cohesive ties. All were paid for their training time until their reliability in practice was .80 (Pearson coefficient). Their rate of pay for evaluation was depended on their reliability coefficient so that they would earn more if they achieved a high correlation with the other evaluators and so that they would have motivation to work as fast as possible. Naturally, communication between them was forbidden.

The experimenter then ran these statistical tests:

(a) t-test on difference scores between instructors; counting both experimental and control students;

(b) analyses of variance of difference scores on the overall quality measure and on the types of cohesive ties for both modes; and

(c) correlation between final scores on the two measures.

Results and Interpretation

Before testing the actual hypotheses, it was necessary to ascertain the reliability of the assessments. A high correlation between the holistic raters reading a paper showed their agreement on the quality of the writing sample and verified the rating. After two evenings of training, the raters spent eleven hours on two successive Saturdays evaluating three hundred essays twice each. Their

inter-rater reliability varied from .9608 to .9674, with a mean of .9633.

The tabulators of cohesive ties had a more difficult task than the holistic evaluators. The concept of counting ties was, of course, completely new to the tabulators. They were four English teachers who volunteered from the two largest high schools in the district. They had four training sessions before their scores reached a correlation of .80, and their tabulations took longer than the holistic ratings. The mean inter-rater reliability was .78.

Correlation of Cohesion and Holistic Quality

A Pearson correlation of .21 ($p < .001$) supports the hypothesis predicting a positive correlation between the number of types of cohesive ties and the holistic quality rating.

Mode

There was no support for the hypothesis predicting differences in cohesion related to the mode of the assignment. None of the analyses of variance showed any significant differences due to mode. The reasons for the lack of difference in modes may be that the persuasive mode was not specifically taught or that basic writing students are not able to distinguish modes (Southwell, 1980).

Gains in Cohesion and Holistic Scores

Two hypotheses depended not on the nature of cohesion or mode but on the instruction given to the students. These hypotheses predicted that experimental students would gain more than control students would in holistic scores and in the number of types of cohesive ties.

t-tests show that the difference between instructors was significant for cohesion scores in the experimental sections ($p < .05$) and for both cohesion ($p < .01$) and holistic scores ($p < .05$) in the control sections. The total holistic difference was also significant ($p < .01$).

Students of one teacher improved more in the experiment but regressed in the control, while students of the other instructor improved more in the control than in the experiment; thus the net effect was small.

Mean Difference in Expository Scores

	Cohesive	Holistic
Teacher 1, Experiment (N=14)	-.78	-.18
Teacher 1, Control (N=22)	.32	.29
Teacher 2, Experiment (N=24)	.75	.31
Teacher 2, Control (N=13)	-.96	-.85

Differences between pretests and posttests were not large enough to be significant; none of the mean differences were larger than the standard deviation. The differences between pretest and posttest means show statistical significance only when the experimental groups are compared with the controls.

The analyses of variance indicate that neither treatment, teacher, nor mode of assignment made any significant difference alone, although the effect of the teacher neared significance for holistic scores ($p = .07$, $F=3.28$). However, the teacher-treatment group interactions caused significant differences in both cohesive ties ($p = 0.02$, $F=5.45$) and holistic gains ($p < .05$, $F = 4.02$). In both cases the interaction accounted for only a small part of the total difference.

The experimental students of one instructor did use more types of cohesive ties and made bigger holistic gains than her control students

did. Neither of these hypotheses were supported in statistics for the students of the other instructor. Perhaps incomplete teaching in one experimental group made students avoid using cohesive ties. The instructor resigned during the experiment but tried to continue teaching her evening sections. She became ill and was hospitalized before the last day of class. Her records showed that assignments were not complete. All her posttests were written on the same day, instead of a week apart, as scheduled.

Conclusions

This study should be repeated with instructors who teach the entire course. It is worth noting that the use of cohesive ties did not automatically transfer merely through an emphasis, although it did correlate with holistic quality. The complete teaching of ties in the mode tested did increase their usage; the teaching did make a difference. A replication would get results that are easier to interpret if all of the writing sample topics were expository; such a plan could control for mode without introducing new problems for basic writers.

It would be interesting also to try teaching cohesion to younger students and basic math students. More training for the cohesion tabulators might increase their inter-rater reliability and hence the accuracy of their results.

The course materials have already been revised for easier teaching. This experiment tested content to be taught, not specific method. It suggests the value and possibility of teaching the mental processes of rhetoric that result in cohesion.

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